REMARKS

Claim 50 has been amended and Claim 58 has been cancelled. No new matter has been added. Claims 50-52, 55-60 and 62 are currently pending.

I. Rejection under 35 U.S.C. § 112

Claim 56 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Examiner stated the following:

> The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time of the application was filed, had possession of the claimed invention. This is new matter rejection.
>
> The claim recites "beta-glucosylceramide and a beta-galactosylceramide". To support the addition of the noted recitation, Applicant cited page 13, line 23 - page14, line 18 of the specification. The Office has thoroughly reviews the cited passages, along with the entire disclosure. Support of the noted recitation cannot be found at the cited passages or within the entire disclosure. Therefore, the rejection for failing to comply with the written description requirement is appropriate.

Applicants respectfully traverse this rejection. Paragraph [0038] of the present invention (Published Application No. 20040171522) states:

> The **intermediary metabolite** can comprise lipids or conjugated biomolecules. The latter can take the form of glycolipids, lipoproteins and glycoproteins other than antibodies, cytokines or hormones. Such glycolipids can in turn comprise a monosaccharide ceramides such as glycosyl ceramide and galactosyl ceramide. (emphasis added).

Also, paragraph [0041] states:

> As described previously, the **intermediary metabolite** can comprise lipids or conjugated biomolecules, e.g., glycolipids, lipoproteins and glycoproteins other than antibodies, cytokines and hormones. The glycolipids can comprise a monosaccharide ceramide. Preferred are glucosyl ceramide or galactosyl ceramide. (emphasis added).

And, paragraph [0046] states that:

> As described earlier, the **intermediary metabolite** can comprise lipids or conjugated biomolecules, the latter including glycolipids, lipoproteins and glycolipids other than antibodies, cytokines and hormones. Useful glycolipids include monosaccharide ceramides such as glucosyl ceramide and galactosyl ceramide. (emphasis added).

Additionally, originally filed Claim 1 recites administering a mammalian intermediary metabolite, and originally filed dependent Claim 5 specifies that this mammalian intermediary metabolite may be glucosylceramide or galactosylceramide.

The required beta glycosyl ceramide limitation is supported by the statement that the glycosyl ceramide must be an intermediary metabolite. An intermediary metabolite is defined as follows:

> "In the present invention metabolites or intermediary metabolites are considered to be products of enzymatic processes in a mammalian system." [0021]

This distinction is relevant since as described in the Background of the Invention:

> "stimulation of the immune system has also been seen by the introduction of alpha-glucosylcerebroside.... This is apparently an antigen-induced series of events since this compound was isolated from a marine sponge and is not a compound normally found in mammalian cells." [0006]

In summary, an alpha glycolipid is not a mammalian metabolite.

Since there are only two possible configurations (alpha and beta) for linking a sugar to a ceramide exist, a glucosylceramide that is not an alpha glucosylceremide is therefore a beta glucosylceramide. For simplicity, Applicants use the term "beta-glucosyl ceramide" rather than "a glucosylcermaide wherein said glucosylceramide is not an alpha glucosylceramide" or "a glucosylceramide wherein said gluscosylceramide is a mammalian intermediary metabolite". Moreover, the cited Motoki et al. reference states that "[t]he structural studies of monoglycosylated ceramides (MonoCers) such as GalCers and glucosylceramides (GluCers) isolated from organ tissues were carried out two decades ago and it was demonstrated that they have the MonoCer structures...".

II. Rejections under 35 U.S.C. § 102

Claims 50-52 and 55-58 are rejected under 35 U.S.C. 102(b) as being anticipated by Motoki et al. The Examiner stated the following:

> The claims are directed to a process comprising the administration of a glycolipid to a diseased subject. Claim 51, which depends on claim 50, requires the administration to modulate the cellular, humoral or cytokine elements of the immune system of the subject. Claim 52, requires the modulation to be specific or non-specific. Claim 55, which depends on claim 50, requires the glycolipid to comprise a monosaccharide ceramide. Claim 56, which depends on claim 55, requires that the monosaccharide ceramide to be beta-glucosylceramide or beta-galactosylceramide. Claim 57, which depends on claim 50, requires the administration be

> intravenous, intramuscular, subcutaneous, intraperitoneal or oral. Claim 58, which depends on claim 50, requires the subject to have cancer.
>
> Motoki et al. teaches a process comprising the administration of a glycolipid to a diseased subject. The glycolipid administered, subcutaneously, by Motoki et al. are beta-glucosylceramide or beta-galactosylceramide, monosaccharide ceramide. The subject of Motoki et al. has cancer. Motoki et al. also demonstrates that the glycolipid is immunostimulatory. In the instant case, Motoki et al. teaches the claimed invention. Motoki et al. anticipates the claimed invention.

To anticipate, a prior art reference "must disclose each and every feature of the claimed invention, either explicitly or inherently". MPEP § 2131; Glaxo Inc. v. Novopharm Ltd., 52F.3d 1043, 1047 (Fed. Cir.1995). Motoki clearly does not anticipate the rejected claims because Motoki does not teach each and every limitation of our claims. Applicants have amended claim 50 to limit the disease to an infection or immune dysfunction, and not to cancer and have also cancelled claim 58.

III. Rejections under 35 U.S.C. § 103

Claims 50, 58 – 60, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motoki et al. as applied to claims 50 and 58, in view of Ogawa et al. The Examiner stated the following:

> Claim 59, which depends on claim 58, requires the infection to be viral or bacterial. Claim 60, which depends on claim 59, requires the viral infection to be HBV, HCV, or HIV.
>
> The significance of Motoki et al., as applied to claims 50 and 58, is provided above. The subject of Motoki et al. is not a virally infected subject, including humans. However, at the time the invention was made, Ogawa et al. also teaches that glycolipids, including beta anomers of the glucosylceramide and galactosylceramides closely relates to receptor functions for physiologically active substances and important cell

functions, such as generation, proliferation, differentiation or immune reactions, via intercellular recognition and interactions. Ogawa et al. also establishes that it is known that glycolipids play a role as a receptor in the host side in the infection with bacteria and viruses. [Lines 55-61, column 1, in particular.] Based on this knowledge, Ogawa et al. discloses the use of glycolipids to inhibit viral infections. Thus, at the time the invention was made, Ogawa et al. establishes that glycolipids have antiviral activities.

Thus, at the time the invention was made, it would have been prima facie obvious for one of ordinary skill in the art to administer the glycolipids taught by Motoki et al. to a virally infected subject, including human and those infected with HBV, HCV or HIV. One of ordinary skill in the art, at the time the invention was made, would have been motivated to do so to inhibit viral infection or to induce an immune response against the infection. One of ordinary skill in the art, at the time the invention was made, would have had a reasonable expectation of success for doing so because the antiviral activities of glycolipids has been demonstrated and established by Ogawa et al.

The recently revised Examiner guidelines for assessing obviousness set forth detailed requirements based on asserted rationales for obviousness. The Rationales To Support Rejections Under 35 U.S.C. §103 provide the following possible rationales:

(A) Combining prior art elements according to known methods to yield predictable results;

(B) Simple substitution of one known element for another to obtain predictable results;

(C) Use of known technique to improve similar devices (methods or products) in the same way;

(D) Applying a known technique to a known device (method or product) ready for improvement to yield predictable results;

> (E) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
>
> (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; and
>
> (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

See MPEP 8th Edition, rev. 6, §2141. Applicant proceeds with the understanding that this rejection conforms to rationale G quoted above. The MPEP further sets forth the requirements for an obviousness rejection under this rationale:

> To reject a claim based on [rationale G], Office personnel must resolve the Graham factual inquiries. Then, Office personnel must articulate the following:
>
> (1) a finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
>
> (2) a finding that there was reasonable expectation of success; and
>
> (3) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

> The rationale to support a conclusion that the claim would have been obvious is that "a person of ordinary skill in the art would have been motivated to combine the prior art to achieve the claimed invention and that there would have been a reasonable expectation of success." DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co., 464 F.3d 1356, 1360, 80 USPQ2d 1641, 1645 (Fed. Cir. 2006). **If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.** [emphasis added]

See MPEP 8th Edition, rev 6, §2143

As part of a *prima facie* case of obviousness, an examiner must establish some reason to combine the references. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1731 (2007); *Takeda Chemical Industries, Ltd. v. Alpharpharm Pty., Ltd.*, 492 F.3d 1350, 1356-1357 (Fed. Cir. 2007). The *KSR Int'l* Court acknowledged the importance of identifying a reason that would have prompted a person of ordinary skill in the art to combine the elements in the way the claimed invention does. *KSR Int'l*, 127 S.Ct. at 1731; *Takeda Chemical*, 492 F.3d at 1356-1357. Repeatedly throughout the *KSR Int'l* decision, the Court discussed the importance that the result obtained by a particular combination was predictable to one of ordinary skill in the art. *KSR Int'l*, 127 S.Ct. at 1731 and 1739-1742.

Applicants respectfully traverse this rejection and assert that the claims are not obvious over Ogawa et al. in view of Motoki et al. The Ogawa et al. reference is entitled "Glycolipid Analogs". This clearly shows that this patent does not describe mammalian intermediary metabolites. Instead, Ogawa et al. provides artificially created compounds which are analogs of naturally occurring glycosylceramides. This is exemplified in the structure where the natural sugar group in a glycosylceramide has been replaced with a 6-member carbon ring. Column 4, lines 26-29 states that "it is constructed by replacing an endocyclic oxygen atom of a hexose pyranose with a methine group having a double bond between C5 and C5a". This is obviously

not a mammalian intermediary metabolite and offers no prediction of a naturally-occurring counterpart having any likelihood of producing effects similar to their analogs.

As such, the Ogawa et al. reference differs from the present invention in that all of the prior art experiments incorporate the use of artificial or non-natural glycolipids. No experiments have been conducted where natural glycolipids have been shown to have an effect on HIV binding. Finally, the methods described in Ogawa et al. reference focus on receptor binding and not the modification of immune responses. Motoki et al. reference does not focus on viruses or their receptors. One of skill in the art would have no motivation to combine these two references.

IV **Double Patenting**

Claims 50-52, 55-60 and 62 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4-6, 9 and 11 of copending Application No. 10/375,906.

Applicants have previously requested that the rejection be held in abeyance until the finding of allowable subject matter. Applicants acknowledge that the Examiner has noted the request and stated that until the rejection is properly addressed, it is maintained on the record.

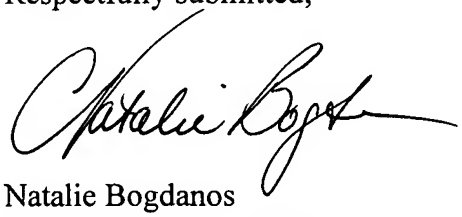
SUMMARY

In view of the foregoing remarks, Applicants respectfully request reconsideration and withdrawal of the rejections of record and further examination of the amended claim. These claim amendments have not resulted in the addition of new matter. Early and favorable action is respectfully requested.

No other fee or fees are believed due in connection with this paper. In the event that any fee or fees are due, however, the United States Patent and Trademark Office is hereby authorized to charge any such fee or fees to Deposit Account No. 05-1135, or to credit any overpayment thereto.

If a telephone conversation would further the prosecution of the present application, Applicants' undersigned attorney requests that she be contacted at the number provided below.

Respectfully submitted,



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